

K073716

APR 11 2008



PHOENIX TECHNOLOGY

510(k) Summary

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Replacement Battery Pack 6L785

**Submitter:** Amco International Manufacturing & Design, Inc.  
Attn: Mr. Adam Milewski  
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Forest Hills, New York 11375

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Phoenix Technology  
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Elizabeth, CO 80107  
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**Date Prepared:** December 20, 2007

**Device Name:** Trade/Proprietary Name: life+cel™ or lifecel™ Battery Pack  
Common/Generic Name: Box Battery  
Classification Name: Box, Battery, Non-Rechargeable

<b>Classification:</b>	<b>Cardiovascular Panel</b>	<b>Class</b>
21CFR 870.5300	DC-Defibrillator	III
21CFR 870.5310	Automated External Defibrillator	III

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## 510(k) Summary – 6L785

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### **Legally Marketed Predicate Devices:**

This submission compares the specifications and functionality of various battery packs with those of similar devices that were included as part of the following original predicate equipment and submissions:

The AMCO 6L785 life+cel™ is the same as that used in the Philips Medical HeartStart FR2 AED cleared under 510(k) notification K013425. The OEM battery was bundled in the submission.

### **Description:**

Non-rechargeable battery packs are utilized as a primary direct current (d-c) power source or as a standby or backup d-c power source for portable as well as stationary medical equipment.

### **Statement of Intended Use:**

To power the functions of various devices for which the batteries or battery packs are intended.

### **Comparison of Technological Characteristics**

The design components and functionality of the 6L785 battery pack are identical to those of their predicate devices. All these devices provide a means of supplying electrical power through chemical reaction. The energy provided depends upon the voltage and capacity rating of a particular pack and the amount of current used by the device into which they are installed. The performance and life span of these batteries depends on operating conditions of temperature, current drain, and the charge/discharge method (if applicable). These parameters are taken into account in designing such batteries. The goal is to develop battery packs that maintain capacity for as high and as long as possible. Typical cell chemistries are Lithium Dioxide, Sealed-Lead Acid (SLA), Nickel-Cadmium (NiCd), and Nickel-Metal Hydride (NiMH).

The Amco 6L785 battery chemistry is Manganese Dioxide (MnO<sub>2</sub>) based and is non-rechargeable. Cell specifications are included with this submission. Cadex Testing is performed to battery pack depletion, in terms of total available capacity in amp-hours.

## **BATTERY PACK TESTING – GENERAL PROTOCOL**

### **INCOMING INSPECTION**

All cells are inspected for correct specification, visible damage, and randomly voltage tested prior to acceptance. The lot numbers are recorded for tracking purposes should any fail during final assembly and inspection activities. Cases are also inspected for form, fit, function, and cosmetics.

### **CADEX TESTING**

Voltage and capacity of rechargeable battery cells and core packs are tested using a Cadex Electronics Battery Analyzer Model C7400ER (Extended Range) in the "Auto Mode" prior to installation into cases or shrink wrap. This exercises the batteries in order to identify performance characteristics by running them through three (3) full charge/discharge cycles. Tests typically take 12 hours for each battery pack. Non-Rechargeable packs are tested to depletion on a random lot sample basis.

All battery chemistries can be tested using custom test parameters, depending on Quality Control and customer requirements. This allows for various C-Rates, delta V ( $\Delta V$ ), and volts-per-cell to be entered into the test protocol through the Cadex Battery Shop Software utility (Reference Cadex Test Report Examples – Exhibit A).

Target capacity is the percentage of the battery capacity compared to nominal capacity and serves as a threshold. This threshold, or target capacity, can be set to any desired range (90 - 95% is typical).

Target capacity is a pass/fail mark and our batteries must meet or exceed a required threshold of 90%, or higher, prior to final Quality Control inspection. Any samples that do not meet the criteria are rejected, and subsequently, the entire lot is tested in this manner.

Battery packs are not shipped fully charged (except non-rechargeable Lithium types). There are specific DOT, FAA, and EPA regulations and guidelines that address these concerns.

### **VOLTAGE TESTING – Completed Packs**

All Battery Packs are tested 100% for correct voltage / polarity prior to shipment. Those devices that fail are rejected and quarantined.

### **DEFIBRILLATOR TESTING**

Independent testing (Beta Tests), as well as random tests on finished packs, are performed using NETECH Model Delta 2000 Defibrillator Analyzers to insure that they meet the expected number of shocks as specified by the OEM's.

## **BATTERY PACK TESTING (continued)**

### **SAFETY and PERFORMANCE**

Safety and performance testing of battery packs are performed to ensure that these devices meet all functional requirements and performance specifications.

In comparison analysis, OEM Battery Packs set the benchmark. Replacement devices must meet or exceed these benchmark results consistently.

Concerns that are addressed during bench test comparison analysis are:

- **Life cycle**

The replacement battery must provide as many or more charge and discharge cycles as the original. This is an ongoing process and is not part of the standard QC final inspection protocol. Shelf life, on the other hand, is based on the original cell manufacturer's specification sheets and Certificates of Conformance.

- **Temperature**

The replacement battery must function correctly over the same temperature range as compared to the original. Testing is done at 0, 25, and 50°C (32, 77, and 122°F respectively).

- **Mechanical & Electrical Component Integrity**

Normal testing would involve drop tests from a predetermined height, usually 2-3 feet, onto a hard, uniform surface. Battery packs are inspected for case cracks, cell separation, and electrical/electronic component damage. Root cause analysis is performed should any damage occur.

- If there is no visible damage, the battery is tested for form, fit, and function.
- Active Safety devices are inspected and tested before use and after installation.



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration  
9200 Corporate Boulevard  
Rockville MD 20850

APR 11 2008

Amco International Manufacturing & Design, Inc.  
c/o Mr. Alexander B. Henderson  
Phoenix Technology  
377 Zane Court  
Elizabeth, Colorado 80107

Re: K073716  
Trade/Device Name: life+cel or lifecel Battery  
Regulation Number: 21 CFR 870.5310  
Regulation Name: Automated External Defibrillator  
Regulatory Class: Class III (Three)  
Product Code: MKJ  
Dated: March 13, 2008  
Received: March 18, 2008

Dear Mr. Henderson:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

This letter will allow you to begin marketing your device as described in your Section 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Center for Devices and Radiological Health's (CDRH's) Office of Compliance at (240) 276-0120. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding postmarket surveillance, please contact CDRH's Office of Surveillance and Biometric's (OSB's) Division of Postmarket Surveillance at 240-276-3474. For questions regarding the reporting of device adverse events (Medical Device Reporting (MDR)), please contact the Division of Surveillance Systems at 240-276-3464. You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (240) 276-3150 or at its Internet address <http://www.fda.gov/cdrh/industry/support/index.html>.

Sincerely yours,

A handwritten signature in black ink, appearing to read "B. Zuckerman for".

Bram D. Zuckerman, M.D.  
Director  
Division of Cardiovascular Devices  
Office of Device Evaluation  
Center for Devices and  
Radiological Health

Enclosure

## Indications for Use

510(k) Number (if known): K073716

Device Name: 6L785 life+cel or lifecel Battery Pack

### Indications for Use:

The 6L785 Sealed Manganese Dioxide (MnO<sub>2</sub>) life+cel (or lifecel) is a replacement disposable battery pack, for use in the Philips Medical Systems FR2 Series AED, specifically OEM Part Number M3863A. This battery pack has a shelf life of 5 years from the date of manufacture.

Prescription Use ✓  
(Part 21 CFR 801 Subpart D)

AND/OR

Over-The-Counter Use \_\_\_\_\_  
(Part 21 CFR 807 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE-CONTINUE ON ANOTHER PAGE IF NEEDED)

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Concurrence of CDRH, Office of Device Evaluation (ODE)

*B. J. Mummery*  
(Division Sign-Off)  
Division of Cardiovascular Devices  
510(k) Number K073716